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BEYOND THE 'EXPLOITATION OF NATURE'? A WORLD-ECOLOGICAL ALTERNATIVE

GENERICSCIENCE APPROPRIATION, CAPITALISM, CAPITALOCENE, CHEAP NATURE, ECOLOGY

Is nature exploited? "Of course!" says the environmentalist. But what might this mean? And, more significantly, is it so? Might there be a better way see the relations between humans and the rest of nature?

On the one hand, "exploitation" is often used by red-green scholars as a moral slogan, a polemical phrase – something Marx did frequently as well (e.g. 1977: 519; also Williams, 1980; Merchant, 1980; Moore, 2000a, 2000b; Plumwood, 1993; Katz, 1998; Smith, 2006). Such polemics have their place. Polemical phrases are often useful, and one shouldn't be too nit-picky about their use; they often overlay and reinforce substantive analytics. Marx's polemical use of exploitation, for instance, overlaid his theory of the exploitation of labor-power. But the polemical use of the exploitation of nature as a trope for all the bad stuff that capitalism "does" to "the" environment has not yet linked up with a theory of the exploitation of nature. This is even the case when the exploitation of labor power and the exploitation of nature are deployed side by side. Absent a theory of exploitation, the polemic seems to have reinforced a generalized drift away from the law of value, and a generalized, at times ritualized, denunciation of capitalism's "war on the earth" (Foster, Clark, and York, 2010).

One of the consequences of the generalized drift away from Marx's value-relational approach is the conversion of the concept of exploitation from an analytical concept to a moral one. Of course there is always a moral dimension to analytics; but moral polemics do not relieve oneself of the analytical task. We may recall that Marx's theory of exploitation as the production of surplus value – in which the rate of exploitation turns on the ratio between surplus and necessary labor-time – is at the center of his critique of classical political economy, and, of course, of capitalism itself.

So, on the other hand (you knew this was coming), the "exploitation of nature" trope (I am reluctant to call it a theory) generates considerable confusion when it comes to how capitalism works. As we will consider presently – and as we've considered previously on this blog – the accumulation of capital unfolds at the nexus of paid work (performed by some humans) and unpaid work (performed by most humans, and all extra-human natures). This is a dialectic of the exploitation of labor-power, within the commodity system, and the appropriation of unpaid work/energy outside the commodity system but directly necessary to its expanded reproduction. Domestic work and childrearing are classic instances, but so too are the appropriation of agro-

ecological fertility and the bountiful mineral deposits. The only thing worse than being exploited, in this perspective, is... being appropriated (see "Capitalism as Frontier")!

What's the big deal with the "exploitation of nature"? Well, most simply, it's not exploitation in any analytical sense. More importantly, however, it reinforced the Cartesian dualism of red-green thought, which tends to convert Marx's internal contradictions (capitalism-in-nature) into external contradictions (capitalism and nature). The metabolic rift perspective has moved furthest in this regard, frequently invoking a *dual exploitation model*: of labor (power) and nature/the environment. In these arguments, the "exploitation of nature" is placed on a more-or-less equal footing with the exploitation of labor power (Foster, 1999: 35; Clark and York, 2005a: 395; Clausen and Clark, 2005: 423; Clark and Foster, 2009; Longo, 2009: 48; Clark and Foster, 2010b: 145; York and Clark, 2010: 492; Magdoff and Foster, 2011: 64; Holleman, 2012: 81; Austin and Clark, 2011: 444; Clark and York, 2013: 30). Indeed, the "exploitation of nature" so frequently that it cannot be dismissed as mere sloganeering. It has real – if theoretically unspecified – meaning in the perspective's critique of capitalism. The real intellectual problem is that the metabolic rift school – which I single out because its influence is so great – has left the big questions unasked: what is the exploitation of nature, how does it relate to the exploitation of labor power, and how does the introduction of dual exploitation model change received notions of capital accumulation?

The dual exploitation model in red-green thought may be something of a dead-end. It's an easy argument to make, because is essentially additive. Like much of green thought, the "exploitation of nature and labor" thesis is arithmetic rather than synthetic. This is what I have called Green Arithmetic: society plus nature. It wasn't a bad place to start; but it's a rather lousy place to end up. Why? Because "nature" and society" are much more fluid categories than we have been led to think; it is difficult to think of any major historical process that has not seen human thought and action "bundled" with the rest of nature.

What happened, since the early 1990s environmental studies boom, was a widespread conversion of marxists to green thought, and a much weaker conversion of greens to Marxism. This reinforced the underlying Cartesian dualism. In this movement, traces of a value-relational approach – one implicit in O'Connor's second contradiction approach – were largely dissolved in favor of the primacy of historical materialism, increasingly conceptualized as an approach for which value relations were epiphenomenal. (This partly explains the curious preference of the metabolic rift school for the neoclassical "Jevons' Paradox" over the Marx's general law of underproduction.) This red-green Cartesianism has been most evident in this couplet – the "exploitation of nature and labor" (Clark and York, 2013) – which does not in fact undermine the older model (in which nature was invisible) but simply adds to it. The dual exploitation model therefore endorses a human exemptionalist ontology, which retains the exploitation of labor-power as crucial to the course of capitalist development, while creating a second category of exploitation in which the exploitation of nature occurs through an external relation to the exploitation of labor power.

This has created difficulties for the formation of a theory of the exploitation of nature, precisely because it is an additive rather than synthetic formulation: positing the exploitation of nature as an external relation to the exploitation of labor power does two things. First, it confuses matters, because nature and labor are not comparable entities. Nature is the field within which human activity unfolds, and is also the object, and precondition of, human activity. Second, it confuses matters yet further by establishing an arbitrary discontinuity between human environment-making – the exploitation of nature – and environment-making by other forms of life. I do not mean to suggest that that all forms of environment-making are created equal; that would be a false equivalence. It is precisely – and counter-intuitively – the proclamation of the "exploitation of nature" as characterizing human environment-making that fails to distinguish between more or less emancipatory, and more or less oppressive, forms of humanity-in-nature. When do humans exploit nature and when do we merely use it? The exploitation of nature argument closes down the question before we can ask it.

A different way forward is suggested by the emphasis on relations of exploitation and appropriation.

If we take the nexus paid/unpaid work as our premise – implicitly suggested by ecological and feminist scholars – the implications are significant. Capitalism and value relations cannot be reduced to a relation between the owners of capital and the possessors of labor-power. To repeat: the historical condition of socially necessary labor-time is socially necessary unpaid work. This observation opens a vista on capitalism as a contradictory unity of production and reproduction that crosses the Cartesian boundary. The crucial divide is between the zone of paid work (the exploitation of commodified labor-power) and the zone of unpaid work (the reproduction of life). This contradictory unity works by creating a relatively narrow sphere of commodity production within which labor-power can be said to yield either rising or falling productivity, which can be represented (imperfectly) through input-output calculations. This narrow sphere, premised on the exploitation of labor-power within commodity production, operates in relation to a much more expansive sphere of appropriation, through which the diversity of nature's "free gifts" – including the reproduction of life from the family to the biosphere – may be taken up into commodity production, but not fully capitalized. Why not fully capitalized? Because the capitalization of reproduction is subject to the exhaustive tendencies we have just discussed, which imply a rising value composition of capital and signals a situation in which capital must bear a great share of its own costs.

The upshot is this. Taking shape in the "long" sixteenth century (1450-1640), this new law of value, turning on socially necessary labor-time within commodity production, required an expansive (*and expanding*) domain of appropriating cheap natures. This was in fact what early capitalism was best at doing: developing technologies and knowledges unusually well-suited to identifying,

coding, and rationalizing cheap natures. Here the new way of seeing the world – inaugurated by the emergence of Renaissance perspective – decisively conditioned a new organizing *technics* for the capitalist world-ecology, manifesting in the cartographic-shipbuilding revolution of early modernity, from the Portolan maps and caravels to Mercator globes and galleons, and much beyond.

Appropriating cheap natures was a far more creative act than the *dependencia* language of plunder allows (e.g. Galeano, 1973; Clark and Foster, 2009; see Moore, 2010a). "Appropriation" represents a productive activity every bit as much as "exploitation." The outright seizure of basic wealth – clearly no invention of the sixteenth century – provided no durable basis for the endless accumulation of capital. What did provide a reliable basis for the new civilization was a set of appropriative practices combined with the world market and technological innovations oriented towards global expansion. Crucially, these comprised quite conscious colonial strategies to reorganize indigenous populations into strategic hamlets that functioned as labor reserves: the *reducciones* in the Andes and the *aldeias* in Brazil (Gade and Escobar, 1982; Schwartz, 1978). The practices enabled rising labor productivity within the only zone that capital cares about: the zone of commodification. It did not matter that horrific levels of mortality accompanied this rising labor productivity so long as the costs of appropriation – through indigenous and African slave trades – were sufficiently low (Schwartz, 1985; Moore, 2007).

This speaks to a problem not only of economic historiography but also of Marxist political economy. We are, in the conventional reading of Marx, offered two categories for the production of surplus value: absolute (more hours worked) and relative (more commodities produced in the same number of hours). For good reason, Marx focused on the basic tendencies at play in the rise of large-scale industry, and this focus has been reproduced ever since. But Marx also points towards a theory of the rate of exploitation that is grounded in the dialectic of human labor with external natures. In this, the fertility of the soil may "act like an increase of fixed capital" (1977: 238, 636-38; quotation from 1973: 748; also 1981: chapter 38). We can take this reference to soil fertility as a shorthand for the life-making capacities of human and extra-human natures. Even where extraordinary soil fertility was in some sense "given," it was equally co-produced: as in the fertility of seventeenth century Bahia or the nineteenth century American Midwest and Great Plains. Absent the cartographic-shipbuilding revolution of the long sixteenth century, or the railroad revolution and the rationalization of American territory in the long nineteenth century, the bounty of these frontiers was no more than *potential*. These "hard" and "soft" technologies of production advanced labor productivity by harnessing the capacities of these natures to work for free. But it took work to get these natures to work for free, and this was the innovation of early capitalist technical advance. Sugar and wheat frontiers remade the world only through extraordinary movements of capital, knowledge, and humans, each movement a mighty expenditure of energy aimed at transforming nature's *work* into the bourgeoisie's *capital*. Yes, coal and oil are dramatic examples of this process of appropriating unpaid work, understood in such a relational framework. But this observation – namely, that fossil fuels have been central to great leaps forward in labor productivity – is turned into a fetish when the same processes are not applied to early capitalism.

The consequence is a massive blindspot in radical thought: the great labor productivity revolution of early capitalism is almost universally ignored.[1] Why? Because our metrics and even narrative frames have been largely unable – or perhaps unwilling? – to bring unpaid work into value-relations. The challenge is to internalize, in our narrative frames and analytical strategies, how configurations of paid and unpaid work stabilize, and are cyclically restructured, through successive productivity regimes in historical capitalism. Returning to our early modern frame, we might ask, How do we internalize the fertility windfalls of *massapé* soils in 17th century Brazil? Of the contributions of the families of the *mitayos* (forced wage-workers) traveling to the Potosi mines? Of Norwegian and Baltic forests to the shipbuilding centers of the Dutch Republic? Of peasant cultivation to the off-season iron-making work of Swedish peasants, whose labor costs were correspondingly much lower than English competitors? And perhaps most spectacularly – I am again transgressing the Cartesian boundary – of African families whose sons and daughters were impressed into plantation labor?

This early modern labor productivity revolution turned not only on Smithian specialization, technological change, and organizational innovation, but also on the new *technics* of value through which cheap natures were mapped, organized, and appropriated. The "fertility" of cheap natures was the pedestal for productivity advance within the commodity zone. Perhaps inadvertently, Clark offers an illuminating contrast about labor productivity informed by a caloric metric. In a passage that would resonate with any energy-centered critic of industrial agriculture (e.g. Pimentel, et al., 1973), Clark notes that the average "worker-hour" in English agriculture around 1800 would have yield about 2,600 calories, premised on wheat, milk, and wheat staples (2007: 67-68). In contrast, the average "worker-hour" in swidden agriculture in turn-of-the-century Brazil, cultivating manioc, maize, and sweet potatoes, yielded anywhere between 7,000 and 17,600 calories (*ibid*; also Werner, et al., 1979).

What does this tell us? Most of all, it tells us that one of the key reasons why capitalism was able to consolidate across the early modern era was its ability to appropriate the astounding realities, and realize the extraordinary potentialities, of uncommodified natures worldwide. If sixteenth century Europe was exceptional in any technological sense, it was this. Food works well as an example, because the metrics are easy, but one could multiply the appropriations of worker-hour windfalls to all sectors of early capitalism. How would work-hour productivity in timber vary between, say, coppiced English forests and the relatively unmanaged Norwegian forests of the late sixteenth century? Or between long-exploited Central European silver mines and Potosi's Cerro Rico around 1550? In a narrow sense, these differences were not "produced" in any straightforward, linear, sense. But neither were these bountiful frontiers simply there for the taking. *They were co-produced.*

There was necessarily a mix of serendipity and strategy at play in early capitalism's productivity revolution: serendipity insofar as New World crops such as maize, potatoes, and manioc were high-yielding, and strategy insofar as the new commodity frontiers (sugar and silver above all) actively constructed their production systems around such high-yielding crops. But even where Old World crops were introduced – the Spaniards in colonial Peru loved wheat bread – the initial yields were extraordinarily high (an order of magnitude greater than the Europe average) and remained so for the first long wave of colonial domination (c. 1545-1640) (Super, 1988; Moore, 2010e). The point can scarcely be overstated: the introduction of "cheap" food, as civilizational strategy, "acts like an increase in fixed capital." The declining price (value composition) of food is advancing labor productivity is the rising rate of exploitation.

The catch? The cheapening of food – along with raw materials and energy – cannot be accomplished by economic and territorial means alone. Cheap food, and "cheap nature" as capitalist project, could be realized only through the symbolic regimes of abstract social nature (see Moore, "The Capitalocene, Part II"). These encompassed the "primitive accumulation of botanical knowledge" organized by Iberian botanical gardens (Cañizares-Esguerra, 2004, 2006), the emergence of a new "map consciousness" (Pickles, 2004), the "death of nature" inaugurated by early modern materialism (Merchant, 1980), and much more. We will have both motive and opportunity to return to the question of abstract social nature in subsequent installments.

[1] This revolution is largely unacknowledged, although sometimes hinted at (Landes, 1998). Why the blindspot? On the one hand, economic historiography remains overwhelmingly Eurocentric, methodologically nationalist, and quantitatively fetishist. On the other hand, it has been unable to grasp the role of unpaid work secured by extra-economic means, which include but go beyond processes of primitive accumulation.

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